5. (Amended) A method as claimed in claim 3 [or claim 4] wherein the charge label is ferrocene, latex microspheres or gold.

6. (Amended) A method as claimed in [any one of claims 1 to 5] claim 1 wherein steps (b) and (c) are performed simultaneously by contacting the sensing electrode with a test solution to which has been added secondary receptors or competing molecules conjugated with a charge label.

9. (Amended) A method as claimed in claim 7 [or claim 8] wherein the enzyme is capable of converting a substrate which has no detectable effect on the redox composition of the electroconductive polymer coating of the sensing electrode to a product capable of directly or indirectly affecting the redox composition of the said electroconductive polymer coating.

13. (Amended) A method as claimed in claim 7 [or claim 8] wherein the enzyme is capable of converting a substrate which has no detectable effect on the redox composition of the electroconductive polymer coating of the sensing electrode to a product which is a substrate for a second enzyme, the action of the second enzyme generating a second product which directly or indirectly affects the redox composition of the electroconductive polymer coating of the sensing electrode.

14. (Amended) A method as claimed in claim 7 [or claim 8] wherein the enzyme is capable of converting a substrate which directly affects the redox composition of the electroconductive polymer coating of the sensing electrode to a product which has no detectable effect on the redox composition of the said electroconductive polymer coating.

15. (Amended) A method as claimed in [any one of claims 1 to 14] claim 1 wherein the receptor molecules are monoclonal antibodies, polyclonal antibodies, antibody fragments, antibody mimics, chimaeric antibodies viral lysates, recombinant proteins, synthetic peptides, hormones, hormone receptors, single stranded nucleic acids, low molecular weight

molecules, chemical compounds conjugated with proteins (haptens), fragments of bacterial, plant or animal cells, lectins, glycoproteins or carbohydrates.

16. (Amended) A method as claimed in [any one of claims 1 to 15] claim 1 wherein the electroconductive polymer coating of the sensing electrode has been doped with dopant anions.

18. (Amended) A method as claimed in [any one of claims 7 to 17] claim 1 wherein steps (b) and (c) are performed simultaneously by contacting the sensing electrode with a test solution to which has been added secondary receptors or competing molecules conjugated with an enzyme label.

19. (Amended) A method as claimed in [any one of claims 1 to 18] claim 1 wherein the sensing electrode comprises adaptor molecules immobilized in or [absorbed] adsorbed to the electroconductive polymer coating thereof and the receptors capable of binding to the analyte to be detected are attached to the said adaptor molecules.

21. (Amended) A method as claimed in claim 19 [or claim 20] wherein the adaptor molecules are molecules capable of binding to at least one class of receptor molecules capable of binding to the said analyte.

22. (Amended) A method as claimed in claim 19 [or claim 20] wherein the receptors capable of binding to the analyte to be detected are biotinylated, the adaptor molecules are avidin or streptavidin and the receptors are attached thereto via a biotin/avidin or biotin/streptavidin binding interaction.

23. (Amended) A method as claimed in claim 19 [or claim 20] wherein the receptors capable of binding to the analyte to be detected are antibodies, the adaptor molecules are protein A or protein G and said antibodies are attached thereto via a protein A/antibody or protein G/antibody binding interaction.

24. (Amended) A method as claimed in claim 19 [or claim 20] wherein the receptors capable of binding to the analyte to be detected contain a sugar moiety, the adaptor molecules are lectins and the receptors are attached thereto via a lectin/sugar binding interaction.

25. (Amended) A method as claimed in claim 19 [or claim 20] wherein the receptors capable of binding to the analyte to be detected are labelled with FITC, the adaptor molecules are anti-FITC antibodies and the receptors are attached thereto via an FITC/anti-FITC binding interaction.

26. (Amended) A method as claimed in [any one of claims 1 to 25] claim 1 in which biological fluids such as whole blood, serum, lymph, urine, saliva, cerebrospinal fluid or semen are used as the test solution.

27. (Amended) A method as claimed in [any one of claims 1 to 26] claim 1 wherein at least steps (d) and (e) are carried out in a flow-through measuring cell.

28. (Amended) A method as claimed in [any one of claims 19 to 27] claim 19 wherein the step of providing a sensing electrode having adaptor molecules immobilized in the electroconductive polymer coating comprises producing the said electrode using a method comprising steps of:

(a) preparing an electrochemical polymerisation solution comprising monomeric units of the electroconductive polymer and adaptor molecules,

(b) immersing an electrically conductive electrode in the electrochemical polymerisation solution, and

(c) applying a cyclic electric potential between the said electrode and the electrochemical polymerisation solution to coat the electrode by electrochemical synthesis of the polymer from the solution, said cyclic electric potential being applied for at least one full cycle.

29. (Amended) A method as claimed in [any one of claims 19 to 27] claim 19 wherein the step of providing a sensing electrode having adaptor molecules adsorbed to the

electroconductive polymer coating comprises producing the said electrode using a method comprising steps of:

(a) preparing an electrochemical polymerisation solution comprising monomeric units of the electroconductive polymer,

(b) immersing an electrically conductive electrode in the electrochemical polymerisation solution,

(c) applying a cyclic electric potential between the electrode and the electrochemical polymerisation solution to coat the electrode by electrochemical synthesis of the polymer from the solution, said cyclic electric potential being applied for at least one full cycle; and

(d) contacting the coated electrode with a solution comprising adaptor molecules such that the adaptor molecules are adsorbed onto the electroconductive polymer coating of the electrode.

30. (Amended) A method as claimed in claim 28 [or claim 29] wherein the adaptor molecules are selected from the group consisting of avidin, streptavidin, anti-FITC antibodies and a molecule capable of specifically binding to at least one class of receptor molecules.

31. (Amended) A method as claimed in [any one of claims 28 to 30] claim 28 wherein monomeric units of the electroconductive polymer are pyrrole, thiophene, furan or aniline.

32. (Amended) A method as claimed in [any one of claims 28 to 31] claim 28 in which a dopant salt is added to the electrochemical polymerisation solution.

34. (Amended) A method as claimed in [any one of claims 28 to 33] claim 28 wherein the cyclic electric potential has a sawtooth form.

35. (Amended) A method as claimed in [any one of claims 28 to 34] claim 28 wherein the cyclic electric potential is applied for at least two cycles.

36. (Amended) A method as claimed in [any one of claims 28 to 35] claim 28 wherein the cyclic electric potential has a peak value applied to the electrode which is less than or equal to +2 volts.

If any other information is needed, please contact the undersigned attorney by phone (617-720-3500, Ext. 343) to expedite the further prosecution of this patent application.

Respectfully submitted,

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